

each case and that the adjustment for different diameters is obtained by the cross sliding movement, of the turret.

Adjustable Fixture for Special Bevel-gear Blanks. — The work *A* shown in Fig. 2 is a special bevel-gear blank, and these gears are used in a great number of sizes on textile machinery. The pieces were held in the first setting by the interior and were machined on the side having the beveled surface and on the periphery; they were also partially under-cut along the edge of the rim in order to provide a clamping surface during the second setting. Extreme accuracy was required in the work, and yet there were so many sizes to be handled that the construction of separate fixtures was deemed inadvisable. A special faceplate *B* was, therefore, designed having three radial dovetail slots *C* (upper view) in its face; and a small portion *F* of each of these slots was left straight to assist in locating the movable jaws *D*. These jaws were made of steel and were radially adjustable to various diameters, being clamped in any desired position by means of the screws *G* and the dovetail shoes *E*. A number of sets of soft steel supplementary jaws *H* were drawn back into a seat on the main jaws by the two screws *I* and were bored in place to the diameter of the outside of the gear, the main jaws being set in place to an approximation of the correct diameter in each instance.

The clamps *A* were drawn down upon the finished portion of the work by means of the screws *J*, in the jaws. A bushing *M* was set in the center of the faceplate and used as a guide for the pilot *N* of the boring-bar *P* which was held in the turret. The tool *O* was used to bore the hole while the tool *Q* faced the unfinished portion of the gear blank, the latter tool being held in two toolposts *R* on the cut-off slide. In handling some of the larger gear blanks, a supplementary head *T* (lower view) was placed on the end of the boring-bar and held in place by the screws *U* on the flatted portion of the bar. This head gave good support to the tool *S* which was used for boring the larger sizes of gear blanks. This tool was held in place by the screws *X* and *V*, the hitter passing through the* hole provided for it in the bar. Fine adjustments were provided for in the